III. Suggested Action Steps and Guiding Questions

This section identifies specific issues to be addressed under each plan component. The suggested action steps are in bold and are followed by guiding questions that explore the step in depth. A form to track the persons responsible for implementing each step and setting completion dates is included in Section IV, "Technology Planning Toolkit." The form is titled "Timeline of Suggested Action Steps."

A. Curriculum

Needs and Resource Assessment

Assess the availability of appropriate technology to meet the individual needs of teachers and students both during the school day and outside school hours.

- Is technology currently available to all students? Are all student groups making equal use of the available technology? For example, is technology used by all students as a tool to promote learning or is it accessible only to some groups of students (e.g., to GATE students or students who finish their work early)?
- Is technology currently available to students during after-school hours? Do students have access to technology in their homes, in community libraries, and/or at community centers? Does access differ for different subpopulations of students? If so, what groups of students have limited or no access?
- Do students have access to appropriate technology to support their learning? For example, are assistive technologies available to students with special needs as well as to other students, such as English language learners, who might benefit from the use of those devices and software?

Assess the school district's current use of hardware and software to support teaching and learning.

- How is technology currently being used in classrooms at each grade level and in each content area?
- How is technology being used to provide powerful learning opportunities, especially for special-needs students and students who required additional resources to improve academic performance?
- Has the district established levels of proficiency in technology by grade levels? If so, are these proficiencies woven into the academic curriculum? Are they taught in separate stand-alone technology lessons/classes?
- How are information literacy skills being taught and at what grade levels?
- How is technology being used in the library media center and labs?
- How is technology currently being used by teachers and administrators to promote effective classroom and school management (for example, are attendance data collected electronically or can student records be transferred electronically from one school to another when a student moves)?
- How is technology currently being used to foster improved two-way communication between home and school?
- Does the community, including parents, need adult education in order to use technology for this two-way communication?

Review the school district's curricular goals as presented in various district and site comprehensive planning documents.

- What are the district's curriculum goals and what are the district's plans for assisting students to meet standards and pass the high school exit examination?
- Are targets for improvement in student achievement being met?
- How do local improvement plans, immediate intervention plans, site plans, self-studies, program quality reviews (PQRs), accreditations (e.g., from the Western Association of Schools and Colleges) link technology use to school improvement efforts? How can technology be used to support these plans?

Goals

Develop clear goals and a specific implementation plan for using technology to improve teaching and learning.

- For each grade level and each content area, how can technology be used to help students meet or exceed grade-level standards? What are the specific grade-level short-term (one-year) goals for using technology to help students reach grade-level standards? What are the long-term (three to five years) goals?
- How will technology be used to create more powerful learning experiences to meet the needs of all students?
- How will technology be used as a diagnostic tool?
- How will distance learning, including online Advanced Placement courses, expand content offerings and/or access to K–12 classes?
- How will technology be used to help students pass the *California High School Exit Examination?*
- What is the role of the library media center in using technology to support the district's curricular goals?
- How will elementary, middle, and high schools work together to ensure that technology supports student needs at all levels?
- When will each of the proposed strategies or methodologies utilizing technology be employed?

Develop clear goals and a specific implementation plan describing how and when students will acquire technological and information literacy skills needed to succeed in the classroom and the workplace.

- How will the plan address technology proficiencies and information literacy skills?
- How will elementary, middle, and high schools work together to ensure that students acquire and retain the identified technology and information literacy skills? How will the library staff assist in ensuring students become effective users of information?
- Will graduation or matriculation requirements include a technology component? If so, how will the plan address helping all students meet these requirements?

Develop clear goals and a specific implementation plan for programs and methods of utilizing technology that ensure appropriate access by all students.

- How can technology be used to extend the school day for students and to make learning resources available during after-school hours?
- What steps can the school district take to ensure equity of access for all students regardless of their academic standing, socioeconomic level, proficiency in English, or disabilities?
- How can technology be used to help support students with special needs?
- Is the school district's acceptable-use policy for access to the Internet up-to-date? How is access to only appropriate Web sites accomplished?

Develop clear goals and a specific implementation plan to utilize technology to make student recordkeeping and assessment more efficient and supportive of teachers' efforts to meet each student's academic needs.

- How will technology assist with student assessment?
- How will technology be used to track a student's progress toward meeting the content standards and passing the *High School Exit Examination*?
- How can teachers and principals reduce the amount of time spent on administrative tasks, such as attendance and grading, by using technology?
- How will data be made more easily available to teachers and principals so that they can make informed decisions?

Develop clear goals and a specific implementation plan to utilize technology so that teachers and administrators can be more accessible to parents.

- Have parents been consulted to determine the ways in which technology may be used to foster better communication between home and school?

- Have parents been made aware of the benefits of education technology and how they might assist their student and/or their school in the use of technology?

Compile benchmarks and a timeline for implementing the strategies and activities. (See a sample management chart and sample implementation timeline in Section IV, "Technology Planning Toolkit.")

Monitoring and Evaluation

Develop a process to monitor whether the strategies and methodologies utilizing technology are being implemented according to the benchmarks and timeline.

- How often will progress be monitored and who will monitor the timeline and progress toward the benchmarks and the timeline for:
  - Using technology to improve teaching and learning?
  - Teaching technology and information literacy skills?
  - Ensuring equitable access to technology for all students?
  - Using technology to improve student recordkeeping?
  - Using technology to make teachers and administrators more accessible to parents?
- How often will the status of implementation of the Curriculum component be reported to the district superintendent? To the local governing board?
- What steps will be taken if parts of the plan are not being implemented on schedule?

Determine the indicators of success that will be used to evaluate whether implementation of the plan has made a positive impact on student achievement.

- How will the school district know whether implementation of this plan has made a positive impact on teaching and learning?
- How will the district know whether implementation of this plan has made a positive impact on classroom, library, and school and school district management?

- What indicators of success will be used (e.g., passing score on the *High School Exit Examination*, number of students successfully meeting grade-level standards and advancing to the next grade, reduced dropout rate, increased attendance)?

B. Professional Development

Needs and Resource Assessment

Survey teachers' and administrators' current technology skills and needs for professional development.

- Are teachers and administrators personally proficient in the use of technology? (See Appendix D, "Levels of Proficiency in Technology Skills.")
- Do teachers and administrators know how to utilize technology in a standards-based curriculum? (See Appendix E, "Matrix of Professional Teachers' Proficiency in Computer-Based Technology.")
- Do teachers have the classroom management strategies to work with the amount of technology actually available in the classrooms?
- What do teachers and administrators consider as their needs for professional development?

Research professional development opportunities.

- What professional development does the regional CTAP provide? Is CTAP available to customize training to meet the school district's needs?
- What kinds of training (e.g., local and distance learning) do institutions of higher education provide?
- What professional development is available through statewide education technology services, such as Technology Information Center for Administrative Leadership (TICAL)?
- What professional development opportunities are available online or through software?

- Do these existing sources of professional development focus on using technology to improve teaching and learning in a standards-based curriculum?
- Do these existing sources of professional development incorporate "The Design Elements for High-Quality Professional Development" (Appendix C)?

Goals

Develop clear goals and a specific implementation plan for providing professional development opportunities based on the needs assessment and the Curriculum component benchmarks and timeline.

- What professional development will be provided to meet the needs of the teachers and administrators as identified through the needs assessment and established curriculum priorities? Does it focus on using technology to improve teaching and learning in a standards-based curriculum? Does it address any needed technology skills development?
- How will professional development be implemented and how will professional growth be supported as teachers and administrators apply what they are learning?
  - Who is responsible? Do the curriculum coordinator, professional development coordinator, technology coordinator, and library media coordinator for the district all share responsibility for integrating school improvement and technology initiatives?
  - Is professional development embedded in the workplace to promote practicing new skills and collaboratively discussing experiences?
  - Is professional development accessible to those who need to participate?
  - Do those participating in professional development have access to the technology tools they need to apply new skills immediately following the training? How will professional development plans be coordinated with purchasing plans to facilitate access?

  - Is timely support available as teachers and administrators try to implement new skills?
  - Does the professional development program help teachers use technology to increase their own subject matter knowledge and/or advance their own professional learning?
  - How will the professional development program incorporate "The Design Elements for High-Quality Professional Development" (Appendix C)?
- How will teachers and administrators be involved in planning their own professional development in accord with the established priorities?
- What is the time frame for providing professional development? What is the first type of professional development that is needed? What is the second type and so on?

Compile benchmarks and a timeline for implementing the strategies and activities. (A sample management chart and sample implementation timeline are provided in Section IV, "Technology Planning Toolkit.")

Monitoring and Evaluation

Develop a process to monitor whether the strategies and methodologies utilizing technology are being implemented according to the benchmarks and timeline.

- How often will progress be monitored and who will monitor the timeline and progress toward the benchmarks for professional development?
- Were all aspects of the professional development program implemented? If not, why not?
- Did teachers and administrators feel supported after the initial training when questions or new situations arose?
- Did teachers and administrators use what was taught? Has the professional development program resulted in changes in instruction over time?

- If change has occurred, did it have a positive effect on student learning?
- How often will the status of implementation of the Professional Development component be reported to the district superintendent? To the local governing board?
- What steps will be taken if parts of the plan are not being implemented on target?

C. Infrastructure, Hardware, Technical Support, and Software

Needs and Resource Assessment

Determine the technology hardware, electronic learning resources, networking and telecommunication infrastructure, physical plant modifications, and technical support needed by teachers, students, and administrators to support the activities in the Curriculum and Professional Development components.

Hardware

- What technology is needed to implement the Curriculum and Professional Development components for students and staff? Where will the technology be placed to support most effectively the Curriculum and Professional Development components?
- Does the school district have minimum specifications for the technology to be purchased? Do these specifications need to be developed or amended?
- Is the total cost of ownership of the technology being considered? If so, how is this addressed?
- Is specialized technology needed to meet student needs?
- Can assistive technologies be beneficially used by student populations not traditionally served by this equipment?
- How will the plan ensure that technology is accessible to all students? How does the plan promote accessibility to technology during after-school hours?

- How will the plan ensure that technology is accessible to teachers and administrators as they apply what they have learned through the professional development provided?

Electronic Learning Resources

- Will the school district adopt software standards and make particular productivity tools and/or courses on software available to all teachers and students? Will these standards address features that promote accessibility, such as the ability to enlarge the font size or to have the text read aloud?
- How will electronic learning resources be selected for each grade level to support the academic content standards? How will the services of the California Learning Resource Network (CLRN) be utilized in this effort?
- Will the electronic learning resources that reside in one location, such as the school library, be made available throughout the school and/or community through a wide area network (WAN) and/or the Internet?
- Which of the needed resources are available online?
- What resources are needed for management, student recordkeeping, and planning?
- Will the management and student recordkeeping software be compatible with other local and state (CSIS) data collection systems?

Networking and Telecommunications Infrastructure

- Will the plan include schoolwide electronic networks? What is the best configuration for these networks? What will it take to implement these designs?
- What is the target bandwidth for networks at school sites and how will this be achieved?
- What is the target bandwidth for networks to classrooms and library/media centers?
- Are these bandwidths sufficient to utilize video streaming and make optimal use of the Digital California Project and other emerging technologies?

- Will there be a district WAN? What is the best configuration for the network? What will it take to implement?
- Could a community WAN be created that would connect community centers, libraries, museums, schools, institutions of higher education, and private homes?
- What security is necessary to protect confidential data and maintain the integrity of the system? Have firewalls and encryption been considered?
- Will filtering software be used to prevent staff or student access to inappropriate Internet sites?
- Will students and teachers be able to access their work from any location in the school or from home?
- Will parents and community members be able to access school information from home computers?
- Will parents be able to access information about their children through home computers?

Physical Plant

- Is there sufficient electrical capacity to the necessary parts of the schools and outlets in the classrooms and libraries to support the hardware and infrastructure planned for each site? Has the electrical system been evaluated and any necessary upgrades planned?
- Are the storage rooms and classrooms in which infrastructure, hardware, and electronic resources reside secure or do they require modification to become secure?
- Is the planned layout of hardware and ancillary wiring configured in a way that is safe for students to move about without creating a fire hazard?
- Have building inspectors and the fire marshal been consulted to ensure code compliance and safety?
- Is there safe and secure access to labs that will be used during nonschool hours by students and/or the community? Are school buildings, property, and users safe and protected?
- Is there a process in place to screen contractors, such as checking their references, prior to hiring them to do the work?

Technical Support

- How will technical support needs be addressed to ensure that the hardware, local area networks (LANs), WANs, and peripherals such as printers function adequately and that problems are addressed within an acceptable response time?
- What is the target ratio of hardware to technical support personnel?
- How will questions regarding software be handled to provide support to teachers within an acceptable response time?
- If the plan includes involving students in technical support, how will the plan be implemented to encourage all students to participate and be trained?

Determine the existing hardware, Internet access, electronic learning resources, infrastructure, and technical support already in place in the school district that could be used to support the Curriculum and Professional Development components.

Hardware (For each site)

- Does the district have an inventory system or does one need to be developed to track the type and age of hardware? (See Section IV, "Technology Planning Toolkit," for a sample school site technology inventory form or visit the California Department of Education Web site <*www.cde.ca.gov/edtech*> to complete a technology survey online.)
- Can existing equipment be modified to meet certain needs identified in the plan?
- Can equipment that does not meet school site needs in the plan be modified to support home access to the school network and/or Internet?

Electronic Learning Resources (For each site)

- For each grade level, what electronic learning resources are currently being used for instruction and/or student assessment?

- How frequently is each type of technology resource used?
- Is each resource used in the classroom, in the library, or in a computer lab?
- Do the licenses for the software currently owned by the school district allow the use of the software by multiple users or through a network?

Networking and Telecommunications Infrastructure (For each site)

- What is the capacity and configuration of networks in the district? Are any areas not connected to the network?
- Is the current Internet service provider able to meet needs?
- How many telephone lines are there to the site and what is the capability of the telephone system (e.g., is there voice mail)?
- Do all staff members have e-mail accounts? Do students have access to e-mail?

Technical Support (For each site)

- Who provides technical support and what is the response time?
- Is this level of technical support meeting the needs of teachers and administrators?

Seek advice and support from experts.

- Has the CTAP regional representative been contacted for guidance?
- Have other districts been contacted regarding their hardware, software, or networking standards that could be utilized to develop the plan?
- Are there industry members and/or nonprofit organizations nearby that may be able to contribute the latest technical information and/or equipment?
- How can the expertise of parents and community groups be solicited and included in the development of this component?

Goals

Develop benchmarks and a timeline for obtaining the needed hardware, infrastructure, learning resources, and technical support required to support the other components. (A sample management chart and implementation timeline are provided in Section IV, "Technology Planning Toolkit.")

- What is the order and timing of purchases over the three- to five-year period necessary to support the timelines in the Curriculum and Professional Development components? Can this acquisition timeline be accomplished with the estimated available resources in the Funding and Budget component? Are there ways that the Curriculum and Professional Development components can be phased in to match the resources available as identified in the Funding and Budget component?
- Do district policies regarding technology purchases need to be updated? For example, are procedures going to change to promote using only electronic learning resources with features that allow universal access? If so, what is the timeline for these changes?
- Will the new technology be delivered (i.e., installed and tested) near the time of teacher professional development?
- Can the summer months be used to install equipment or software as well as provide training?
- Does the timeline take into consideration other overlapping efforts, such as building modernization or instructional material purchases, that could affect the cost and timing of the efforts?

Monitoring and Evaluation

Develop a process to monitor whether the benchmarks are being reached within the specified time frame.

- How often will progress be monitored and who will monitor the timeline and progress toward the benchmarks in the component?
- How often will the inventory of technology resources be updated and who will be responsible for updating it?

- How often will the status of implementation of the Infrastructure, Hardware, Technical Support, and Software component be reported to the district superintendent? To the local governing board?
- What steps will be taken if parts of this component are not being implemented on schedule?

D. Funding and Budget

Needs and Resource Assessment

Identify all costs associated with implementing each component. (Sample budget forms are provided in Section IV, "Technology Planning Toolkit.")

Identify the current budget for implementing each component.

- What provisions in the current budget are made for technology expenditures, and what options exist to fund technology over time?
- Has the school district established separate SACS (standardized account code structure) codes for any items in the budget to improve the ability to monitor gradual implementation of the plan?

Identify established and potential funding sources, present and future. (A sample sustainability chart is provided in Section IV, "Technology Planning Toolkit.")

- Has the amount of district funding available for technology been identified?
- Have alternative sources of funding, such as those available through partnerships, been identified?
- Are there federal, state, or local programs that could provide funding for technology?
- Would allocating resources for grant writing proposals be a viable option?

Consider options for reducing costs.

- Have any hardware and software purchasing agreements within the school district been considered?
- Have C-SMART discounts/purchasing options been considered?
- Are there nearby industry experts or nonprofit organizations that may be willing to be a partner in the support of the district's technology efforts?
- Have the potential purchases been advertised to parents and the community? (An individual or an organization may be willing to donate services, money, or product.)
- Could leasing equipment minimize costs and/or help resolve support issues?
- Can the professional development be provided at a lower cost and more effectively by integrating the technology training into existing professional development on content or pedagogy?
- Is the on-site expertise of library media teachers used effectively in the professional development plan?

Goals

Develop and implement annual budgets for the term of the plan (three to five years).

- Does the budget include allocations to acquire the hardware, electronic learning resources, infrastructure, professional development, and technical support necessary to implement the plan?
- Within each year's budget, have one-time costs been identified as well as ongoing costs?
- Can some of the professional development be provided by CTAP at a reduced cost?
- What other sources of low-cost professional development does CTAP recommend?

Provide for ongoing technical support.

- Could extended warranties from the seller or contracted technical support provide some of the needed maintenance or is it more cost-effective for the school district to employ staff for the required level of technical support?
- Is there backup equipment available should key components break down? If not, does the budget include funding to acquire this equipment?
- Have other options for technical support been considered, such as student-based or parent-led programs that incorporate advanced technology training for program participants?

Plan for the obsolescence of equipment.

- What replacement cycle has been built into the plan? Will adequate funding be set aside for replacements?
- Have feeder schools in the district or low-income families been considered as recipients of older equipment?

Monitoring and Evaluation

Establish a feedback loop to monitor and improve progress.

- Has technology budgeting been integrated into the district general budget process in a manner consistent with the Funding and Budget component?
- Has a process for monitoring modification of the physical plant, acquisition of equipment, and updating of the budget and budget process been agreed on? Has the person who will be responsible for administering this monitoring process been identified?
- Have regular meetings been scheduled with the superintendent and/or district governing board to (1) update them on progress in obtaining funds to support implementation of the plan; (2) explain difficulties; and (3) offer revisions to the plan to resolve the problems?
- What steps will be taken if parts of the Funding and Budget component are not being implemented on schedule?

E. Monitoring and Evaluation

Needs and Resource Assessment

Review the implementation monitoring process included under each component of the plan.

- How will the timelines and benchmarks included in each component of the plan be used to create an overall system for measuring the successful implementation of the plan?
- How will the level of technology used be determined over time? What data will be collected? What are the data collection intervals?
- How will data be collected and analyzed to ensure that equity and access issues for students, as well as for teachers and administrators, are monitored on an ongoing basis?

Determine how to evaluate the impact of technology on student learning.

- What criteria will be used to measure success (e.g., test scores, student portfolios, percentage of students attaining grade-level content standards, attendance, dropout rate, matriculation to college, or full-time employment)? Are they the same criteria established for measuring success in the school district's comprehensive local improvement plan?
- How will the evaluation treat special populations to determine not only the overall effect of the use of technology but also its effect on targeted populations, such as lower socioeconomic students, high-achieving students, special education students, and so forth?
- How will the evaluation take into account different levels of access and type of use?
- Have teachers and site administrators been consulted in determining the criteria that will be used to measure success?
- Has the CTAP regional representative been contacted for guidance and assistance?
- Have institutions of higher education with expertise in education technology been contacted for guidance and assistance?

Research and consider monitoring and evaluation tools provided at little or no cost to the school district.

- Has the CTAP regional representative been contacted for guidance and assistance?
- Have institutions of higher education with expertise in education technology been contacted for guidance and assistance?
- Are there nearby members of industry that may be willing to partner in the evaluation process?
- What resources from government, nonprofit agencies, and/or industry would be useful?
- Have other district technology and library media coordinators been contacted regarding recommendations for evaluation design and/or instruments?

Design a schedule for evaluating the effect of plan implementation while realizing that infusing technology into daily school operations is an evolving process. (A sample management chart and implementation timeline are provided in Section IV, "Technology Planning Toolkit.")

- How often will plan implementation be evaluated and who will evaluate the effect of the plan on teaching and learning?
- How will data be collected and analyzed to ensure that equity and access issues for students, as well as teachers and administrators, are evaluated on an ongoing basis?
- Have teachers and site administrators been consulted in designing the data collection method?
- Is there an open line of communication for teachers, parents, and other stakeholders to provide their suggestions and opinions in the evaluation process?
- What will be the frequency of reporting evaluation results? Will reporting be done at least yearly?

Determine how and when the results of the monitoring process and evaluation will be used.

- How often will the status of plan implementation be reported to the district superintendent? To the local governing board? To other stakeholders?
- If necessary, what process will be used to make mid-course corrections as a result of the monitoring effort or the evaluation?
- How will strategies that have had a positive effect on teaching and learning be communicated to others so that they can be replicated?
- How will technology success stories be documented and publicized?